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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/067,933

02/08/2002

Patrick Brindel

Q68315

6540

7590

01/10/2005

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EXAMINER

LI, SHI K


ART UNIT

PAPER NUMBER

2633

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b> 	
	10/067,933	BRINDEL ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Shi K. Li	2633	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 February 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Drawings*

1. FIG. 1 and FIG. 2 are objected to under 37 CFR 1.84(o) because there are no descriptive legends for the boxes. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 4 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Daza et al. (M. Daza, et al., "All-Optical WDM-to-TDM Conversion with Total Capacity of 33 Gb/s for WDM Network Links", IEEE Journal of Selected Topics in Quantum Electronics, Vol. 3, No. 5, October 1997).

Regarding claims 1 and 6, Daza et al. teaches in FIG. 3 a WDM-to-TDM conversion comprising a non-linear optical mirror (NOLM) with a data access and a probe access. The data access receives WDM data from EDFA and the probe access receives a clock signal of wavelength  $\lambda_{\text{probe}}$  from a hybrid mode-locked semiconductor laser (HML-SL). The NOLM outputs an optical data of wavelength  $\lambda_{\text{probe}}$ . Daza et al. explains in p. 1289, left col., last paragraph that the bit rate of the clock is  $F_0$  and the bit rate of each wavelength channel is  $F_0/N$ .

Regarding claims 2 and 7, Daza et al. includes in FIG. 3 optical filter at the output.

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Regarding claim 4, Daza et al. teaches in FIG. 3 a NOLM.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daza et al. (M. Daza, et al., "All-Optical WDM-to-TDM Conversion with Total Capacity of 33 Gb/s for WDM Network Links", IEEE Journal of Selected Topics in Quantum Electronics, Vol. 3, No. 5, October 1997) in view of Mikkelsen et al. (U.S. Patent 6,614,582 B1).

Daza et al. has been discussed above in regard to claims 1-2, 4 and 6-7. The difference between Daza et al. and the claimed invention is that Daza et al. does not teach to use a SOA Mach-Zehnder interferometer as a wavelength converter. Daza et al. teaches in p. 1288 that the function of the NOLM is wavelength conversion. Mikkelsen et al. teaches in FIG. 1A a SOA Mach-Zehnder interferometer wavelength converter. One of ordinary skill in the art would have been motivated to combine the teaching of Mikkelsen et al. with the WDM-to-TDM conversion of Daza et al. because SOA Mach-Zehnder interferometer wavelength converter has high conversion efficiency, extinction ratio enhancement and low chirp characteristics. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use SOA Mach-Zehnder interferometer wavelength converter, as taught by Mikkelsen et al., in the WDM-to-TDM conversion of Daza et al. because SOA Mach-Zehnder interferometer

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wavelength converter has high conversion efficiency, extinction ratio enhancement and low chirp characteristics.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daza et al. (M. Daza, et al., "All-Optical WDM-to-TDM Conversion with Total Capacity of 33 Gb/s for WDM Network Links", IEEE Journal of Selected Topics in Quantum Electronics, Vol. 3, No. 5, October 1997) in view of Tai (U.S. Patent 6,275,322 B1).

Daza et al. has been discussed above in regard to claims 1-2, 4 and 6-7. The difference between Daza et al. and the claimed invention is that Daza et al. does not teach to use an interleaver for multiplexing different wavelength channels, instead, Daza et al. uses a combiner to combine wavelength channels. However, using interleaver for multiplexing wavelength channels is well known in the art. For example, Tai teaches in FIG. 14 to use interleavers 1410, 1420 and 1430 to multiplex wavelength channels. One of ordinary skill in the art would have been motivated to combine the teaching of Tai with the WDM-TDM conversion of Daza et al. because interleavers are inexpensive and have good filtering characteristics. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use interleavers for multiplexing different wavelength channels, as taught by Tai, in the WDM-TDM conversion of Daza et al. because interleavers are inexpensive and have good filtering characteristics.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Saunders (U.S. Patent 6,388,781 B1) discloses in FIG. 5 a WDM-to-TDM converter.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl  
2 January 2005

  
JASON CHAN  
SUPERVISORY PATENT EXAMINER  
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